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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/755,630	01/12/2004	Christian Jackson	IJ0049USNA	9393
23906 7590 04/28/2010 E I DU PONT DE NEMOURS AND COMPANY LEGAL PATENT RECORDS CENTER BARLEY MILL PLAZA 25/1122B 4417 LANCASTER PIKE WILMINGTON, DE 19805				
EXAMINER MARTIN, LAURA E				
ART UNIT 2853		PAPER NUMBER		
NOTIFICATION DATE 04/28/2010		DELIVERY MODE ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTO-Legal.PRC@usa.dupont.com

Office Action Summary

Application No.

10/755,630

Applicant(s)

JACKSON ET AL.

Examiner

LAURA E. MARTIN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 January 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3, 5-9 and 21-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 5-9 and 21-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-06)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 5-7, 21-24 and 27-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katsuragi et al. (US 2002/0069789 A1) in view of Zhu (US 5889083 A).

Katsuragi et al. discloses the following claim limitations:

As per claims 1, 21, and 27: a first ink containing a self-dispersing pigment [0175]; a fixing fluid comprising a soluble copper salt in a second aqueous vehicle, said copper salt is divalent and selected from the group consisting of copper nitrate, copper sulfate, and copper acetate (claims 1 and 4).

As per claims 5, 22, and 28: at least four differently colored aqueous inks, at least one of the colored inks being the first ink [0237] (table 2).

As per claims 6, 23 and 29: the colorants in the colored aqueous inks comprise pigments [0059].

Katsuragi et al. do not disclose the following claim limitations:

As per claim 1: said first ink comprises a soluble polymer binder.

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As per claim 21: said first ink comprises an effective amount of a calcium cation.

As per claim 27: said first ink comprises a soluble polymer binder and an effective amount of a calcium cation.

Zhu discloses the following claim limitations:

As per claim 1: a first ink comprising a dispersible pigment (column 3, lines 25-29) dispersed in a first aqueous vehicle, wherein said first ink comprises a soluble polymer binder (column 4, lines 48-54).

As per claim 21: a first ink comprising a dispersible pigment (column 3, lines 25-29) dispersed in a first aqueous vehicle, wherein said first ink comprises an effective amount of a calcium cation (column 9, line 60 – column 10, line 10).

As per claim 27: a first ink comprising a dispersible pigment (column 3, lines 25-29) dispersed in a first aqueous vehicle, wherein said first ink comprises a soluble polymer binder (column 4, lines 48-54) and an effective amount of a calcium cation (column 9, line 60 – column 10, line 10).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink set taught by Katsuragi et al. with the disclosure of Zhu in order to improve water fastness and strong rub and scratch resistance of printed images. It would have been well known in the art at the time of the invention that different ink compositions can be used with different liquid fixer formations

As per claims 7, 24 and 30, Katsuragi et al. as modified disclose the claimed invention except for the soluble copper in the fixing fluid present at a level of at least 0.05 mole/L. It would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the range of concentrations in order to improve fixing properties of the solution, since it would has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller* 105 USPQ 233.

Claims 1, 5-7, 21-24 and 27-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu (US 5889083 A) in view of Katsuragi et al. (US 2002/0069789 A1).

Zhu discloses the following claim limitations:

As per claim 1: a first ink comprising a dispersible pigment (column 3, lines 25-29) dispersed in a first aqueous vehicle, wherein said first ink comprises a soluble polymer binder (column 4, lines 48-54).

As per claims 5, 22, and 28: at least four differently colored aqueous inks, at least one of the colored inks being the first ink (column 3, line 25 - column 4, line 21).

As per claims 6, 23 and 29: the colorants in the colored aqueous inks comprise pigments (column 3, lines 25-28)

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As per claim 21: a first ink comprising a dispersible pigment (column 3, lines 25-29) dispersed in a first aqueous vehicle, wherein said first ink comprises an effective amount of a calcium cation (column 9, line 60 – column 10, line 10).

As per claim 27: a first ink comprising a dispersible pigment (column 3, lines 25-29) dispersed in a first aqueous vehicle, wherein said first ink comprises a soluble polymer binder (column 4, lines 48-54) and an effective amount of a calcium cation (column 9, line 60 – column 10, line 10).

Zhu does not disclose the following claim limitations:

As per claims 1, 21, and 27: a first ink containing specifically a self-dispersing pigment; a fixing fluid comprising a soluble copper salt in a second aqueous vehicle, said copper salt is divalent and selected from the group consisting of copper nitrate, copper sulfate, and copper acetate

Katsuragi et al. disclose the following claim limitations:

As per claims 1, 21, and 27: a first ink containing a self-dispersing pigment [0175]; a fixing fluid comprising a soluble copper salt in a second aqueous vehicle, said copper salt is divalent and selected from the group consisting of copper nitrate, copper sulfate, and copper acetate (claims 1 and 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink set taught by Zhu with the disclosure of Katsuragi in order to improve water fastness and image quality. It would have been well known in the art at the time of the invention that different ink compositions can be used with different liquid fixer formations

As per claims 7, 24 and 30, Zhu as modified disclose the claimed invention except for the soluble copper in the fixing fluid present at a level of at least 0.05 mole/L. It would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the range of concentrations, since it would has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller* 105 USPQ 233.

Claims 3, 31 and 36-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu (US 5889083 A) and Katsuragi et al. (US 2002/0069789 A1), and further in view of Yue et al. (US 6461418 B1).

Zhu discloses the following claim limitations:

As per claims 3 and 31: a polymer binder having a number average molecular weight in the range of 1000 to 20000 (column 4, lines 62-67).

Zhu as modified do not disclose the following claim limitations:

As per claims 3 and 31: a polymer binder being substantial linear and anionic.

Yue et al. disclose the following claim limitations:

As per claims 3 and 31: the soluble binder is a substantially linear, anionic polymer having a number average molecular weight in the range of 1000 to 20000 (column 4, lines 15-25).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink set and method taught by Zhu as modified with the

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disclosure of Yue et al. in order to create a higher quality ink with higher levels of water fastness, light fastness, and rub resistance.

As per claims 36-39, Zhu as modified disclose the claimed invention the linear, anionic polymer has an ionizable acid groups and the acid content is from 0.65 to 2.9 milliequivalents, more specifically from 0.9 to 1.75 milliequivalents. It would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the range of concentrations of the acid contents, since it would have been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller* 105 USPQ 233.

Claims 8, 9, 25, 26, 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katsuragi et al. (US 2002/0069789 A1) and Zhu (US 5889083 A), and further in view of Suzuki et al. (US 6153001 A).

Katsuragi et al. as modified discloses the following claim limitations:

The ink set claims 1, 21 and 27.

Katsuragi et al. as modified do not disclose the following claim limitations:

As per claims 8, 25 and 32: the self-dispersing pigment in the first ink is self-dispersing carbon black pigment comprising anionic hydrophilic moieties.

As per claims 9, 26 and 33: the anionic hydrophilic moieties on the self-dispersing carbon black pigment are primarily carboxyl groups.

Suzuki et al. disclose the following claim limitations:

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As per claims 8, 25 and 32: the self-dispersing pigment in the first ink is self-dispersing carbon black pigment comprising anionic hydrophilic moieties (column 7, lines 13-52 and 63-65).

As per claims 9, 26 and 33: the anionic hydrophilic moieties on the self-dispersing carbon black pigment are primarily carboxyl groups (column 7, lines 13-52 and 63-65).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink set and method taught by Katsuragi et al. as modified with the disclosure of Suzuki et al. in order to create a higher quality ink with better stability.

Response to Arguments

Applicant's arguments filed 1/21/10 have been fully considered but they are not persuasive. Applicant argues that Katsuragi et al. do not disclose the prior art. While calcium and magnesium polyvalent metal salts are listed as preferred, the reference still discloses the copper salts taught up in the claim language, therefore reading up on the limitation.

Applicant also argues that the examiner has not made a prima facie case that the claimed compositions would have been obvious on the teachings of Katsuragi and Zhu. At the time of the invention, it would have been well known in the art to use different inks and fixing fluids together; it also would have been well known in the art to try different combinations of chemicals within the compositions. It was well known in the art at the time of the invention that both

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binders and calcium cations can be used in ink compositions. All of the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention. (*KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (2007)).

Applicant also argues that the examiner has not demonstrated why the self-dispersing pigment of Katsuragai would be equated to the dispersed colorant of Zhu; however, the examiner notes in column 3, lines 29-34 that a self-dispersed carbon black can be a colorant used in the ink. While it may not be the most preferred pigment to be used in the ink composition, Zhu discloses that this pigment can be used and therefore applicant's argument is moot. Also, it would have been well known in the art at the time of the invention to substitute different pigments in inks.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory

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action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAURA E. MARTIN whose telephone number is (571)272-2160. The examiner can normally be reached on Monday - Friday, 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/L. E. M./

Examiner, Art Unit 2853

/Stephen D Meier/

Supervisory Patent Examiner, Art Unit 2853